PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 2705-903	FOR FURTHER ACTION	See item 4 below
International application No. PCT/US2007/069567	International filing date *(day/month/year)* 23 May 2007 (23.05.2007)	Priority date *(day/month/year)* 24 January 2007 (24.01.2007)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CISCO TECHNOLOGY, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

    In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

    ☒ Box No. I   Basis of the report

    ☐ Box No. II   Priority

    ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

    ☐ Box No. IV   Lack of unity of invention

    ☒ Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

    ☐ Box No. VI   Certain documents cited

    ☐ Box No. VII   Certain defects in the international application

    ☐ Box No. VIII   Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 28 July 2009 (28.07.2009)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing (day/month/year)	12 AUG 2008

Applicant's or agent's file reference	FOR FURTHER ACTION
2705-903	See paragraph 2 below

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/US07/69567	23 May 2007 (23.05.2007)	24 January 2007 (24.01.2007)

International Patent Classification (IPC) or both national classification and IPC

IPC: H04L 12/28(2006.01),12/56(2006.01)
USPC: 370/489

Applicant
CISCO TECHNOLOGY, INC.

1. This opinion contains indications relating to the following items:

☒   Box No. I   Basis of the opinion

☐   Box No. II   Priority

☐   Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐   Box No. IV   Lack of unity of invention

☒   Box No. V   Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐   Box No. VI   Certain documents cited

☐   Box No. VII   Certain defects in the international application

☐   Box No. VIII   Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis(b)* that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	23 June 2008 (23.06.2008)	Seema Rao Telephone No. (571)272-5305

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE	International application No.
INTERNATIONAL SEARCHING AUTHORITY	PCT/US07/69567

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material

       ☐ a sequence listing

       ☐ table(s) related to the sequence listing

   b. format of material

       ☐ on paper

       ☐ in electronic form

   c. time of filing/furnishing

       ☐ contained in the international application as filed.

       ☐ filed together with the international application in electronic form.

       ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Form PCT/ISA/237(Box No. I) (April 2007)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY	International application No. PCT/US07/69567

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-20	YES
	Claims NONE	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-20	NO
Industrial applicability (IA)	Claims 1-20	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

Form PCT/ISA/237 (Box No. V) (April 2007)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US07/69567

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:
I. **Claims 1-17, 19, and 20** lack an inventive step under PCT 33(3) as being obvious over Gobara et al. (WO 2005/109785 A1, refer to the English language version in US 20070171835 A1, hereinafter Gobara) and Rosenberg et al., IETF RFC 3489, March 2003 (hereinafter RFC34890).

For **claim 1, 7 and 14**, Gobara discloses an apparatus and a method, comprising:
one or more processors; and
a memory coupled to the one or more processors comprising instructions executable by the processors (any router as shown in FIG. 3]), the processors operable when executing the instructions to:
receiving incoming packets [claim 7] ("bubble packet", [0011]);
identifying one or more of the incoming packets as containing a predetermined message format (bubble packet, [0011] or STUN packet, [0004]) [claim 7];
decrement lifetime of incoming packets before performing a forwarding function ("decrement the TTL by one", [0084]);
identify one or more of the incoming packets containing decremented lifetime values indicating an exceeded lifetime (identifying the bubble packet described in [0011]).
observing whether the identified packets include a trigger (TTL, [0038]) for initiating analysis of one or more data streams that terminate on a remote endpoint that generated and inserted the trigger [claim 7] (suggested by "TTL=0", [0048], which generates a "check packet ... due to ICMP Timer expired", [0048]);
initiating an analysis of the data streams in response to observing the trigger included in the identified packets [claim 7] (analyzing the received packet);
examine the identified packets having the exceeded lifetime for a monitoring request (STUN message, [0007]); and
monitor a call flow according to the monitoring request (monitor a call flow according to SUN message, [0007]), the monitoring request formatted to trigger the on-path intermediary devices to initiate monitoring of a call flow terminating on a remote endpoint having the destination address (as shown in FIG. 3 and 4 and [0048]).

Supplemental Box
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Gobara does not specifically disclose STUN message is a STUN request message.

RFC3489 discloses STUN request messages ("There are two requests, Binding Request and Shared Secret Request", last paragraph of page 24), RFC3489 provides background information for Gobara and is recited by Gobara ([0004]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine modify Gobara with RFC3489 to use STUN request message as a monitoring request.

As to **claim 2**, Gobara and RFC3489 disclose the apparatus of claim 1, Gobara further discloses the unidentified packets are not examined for the monitoring request (only bubble packets are examined, the packet that is not bubble will not be examined).

As to **claim 3 and 17**, Gobara and RFC3489 disclose claim 1 and 14, Gobara further discloses the identified packets correspond to a traceroute initiated by an endpoint for the call flow (traceroute, [0015] and FIG. 3).

As to **claim 4**. Gobara and RFC 3489 disclose the apparatus of claim 1, RFC3489 further discloses the monitoring request is located in a payload of an address request message (monitoring request are in the body of STUN message, as shown in Secton 11.2, page 26).

As to **claim 5 and 12**. Gobara and RFC 3489 disclose claim 1 and 7, RFC3489 further discloses the processors are further operable to: extract a call flow identifier ("Transaction ID", page 25) from the monitoring request; and insert the call flow identifier into locally generated monitoring results (STUN Response message will have the same "Transaction ID", as shown in Section 11.1, page 25).

As to **claim 6**. Gobara and RFC 3489 disclose the apparatus of claim 1, RFC3489 further discloses the processors are further operable to send an error message usable by an endpoint to discover the presence of a router located on the call path ("0x111: Binding Error Response", page 25).

As to **claim 8**. Gobara and RFC 3489 disclose claim 7, RFC3489 further discloses the identified packets are identified as having exceeded lifetimes and are dropped after receipt without forwarding (suggested by "TTL=0, and disappears", [0068]).

As to **claim 9 and 15**, Gobara and RFC3489 disclose claim 7 and 14, Gobara further discloses the predetermined message format corresponds to Simple Traversal of User Datagram Protocol (UDP) Through Network Address Translators (NATs) (STUN) ("STUN", [0004]).

As to **claim 10**, Gobara and RFC3489 disclose claim 7, Gobara further discloses the method comprising analyzing the data streams only for a duration specified in the identified packets ("a span of packet life may be set", [0072]).

As to **claim 11**, Gobara and RFC3489 disclose claim 7, Gobara further discloses storing results of the analysis in a non-default location when a Universal Resource Location (URL) is included within an address request payload included in the identified incoming packets (URL is commonly used to specify an information storage location, as shown in [0004]).

As to **claim 13**, Gobara and RFC3489 disclose the method of claim 12, wherein the initiated analysis is different than a default packet flow analysis performed on the data streams before the initiated analysis begins (analysis on STUN messages disclosed by RFC3489 is different than the ome normal data packets,[0004]).

As to **claim 16**, Gobara and RFC3489 disclose claim 14, comprising means for formatting the monitoring request to specify an inter-arrival jitter analysis.

As to **claim 19**, Gobara and RFC3489 disclose claim 14, apparatus of claim 14 wherein each of the packets are formatted to achieve a different amount of network hops before being dropped (packet is dropped when TTL=0, as suggested by "TTL=0, and disappears", [0068]).

As to **claim 20**, Gobara and RFC3489 disclose claim 14, Gobara further discloses each of the packets are formatted to initiate monitoring on a different respective one of the on-path intermediary devices that drops the packet (in

Form PCT/ISA/237 (Supplemental Box) (April 2007)

<table>
<tr><td rowspan="2">WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY</td><td>International application No.
PCT/US07/69567</td></tr>
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Supplemental Box
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FIG. 3 and 4 and [0048]).

II. **Claim 18** lacks an inventive step under PCT 33(3) as being obvious over Gobara, RFC3489, and Crawford et al., (US 20050243733 A1, hereinafter Crawford).

    As to **claim 18**, Gobara and RFC3489 disclose claim claim 17, but are silent on the traceroute is a Real Time Protocol (RTP) traceroute.
    Crawford discloses RTP traceroute ("RTP traceroute packets", [0012]). RTR traceroute is simply a special version of traceroute that provides the desired information more quickly.
    Therefore, it would have been obvious to a person of ordinary skill in the art at the time to combine Gobara and RFC3489 with Crawford to use RTP traceroute to provide the desired information more quickly.

III. **Claims 1-20** meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.